

What is claimed is:

1     1. A broadcasting apparatus for broadcasting an interactive  
2     program composed of a plurality of contents that are linked  
3     to one another, the broadcasting apparatus comprising:  
4         content storing means for storing the plurality of  
5     contents, each content including a set of video data and a  
6     set of control information that indicates another content  
7     that is a link destination for a present content; and  
8         transmitting means for multiplexing a set of video  
9     data and a plurality of sets of the same control information  
10    included in a same content as the set of video data, and for  
11    transmitting the multiplexed sets of video data and control  
12    information.

1     2. The broadcasting apparatus of Claim 1, wherein the  
2     content storing means includes:  
3         first storing means for storing the sets of video data  
4     included in the plurality of contents;  
5         second storing means for storing the sets of control  
6     information included in the plurality of contents; and  
7         construction table storing means for storing a  
8     construction table showing correspondence between the sets  
9     of video data stored in the first storing means and the sets  
10    of control information stored in the second storing means.

1     3. The broadcasting apparatus of Claim 2, wherein the

2 transmitting means includes:

3       multiplexing means for reading the plurality of sets  
4 of video data stored in the first storing means and the  
5 plurality of sets of control information stored in the  
6 second storing means as respective digital data streams, and  
7 multiplexing the digital data streams to generate a  
8 multiplexed stream;

9       multiplexing control means for referring to the  
10 construction table and controlling the multiplexing means to  
11 multiplex the plurality of sets of video data and to  
12 repeatedly multiplex a set of control information  
13 corresponding to a set of video data; and

14       broadcasting means for placing the multiplexed stream  
15 generated by the multiplexing means onto a digital broadcast  
16 wave and broadcasting the digital broadcast wave.

1       4. The broadcasting apparatus of Claim 3, wherein the  
2 content storing means further includes:

3       third storing means for storing sets of audio data  
4 that correspond to the sets of video data,

5       wherein the construction table storing means stores  
6 correspondence between a set of video data, a set of audio  
7 data, and a set of control information included in each of  
8 the plurality of contents,

9       and wherein the multiplexing means also multiplexes  
10 the sets of audio data stored in the third storing means

11 into the multiplexed stream.

1 5. The broadcasting apparatus of Claim 3,  
2 wherein each content includes a plurality of sets of  
3 control information, each set of control information  
4 including a set of link information showing contents that  
5 are link destinations and a set of time information  
6 indicating a valid period for the present control  
7 information within the reproduction period of the set of  
8 video data corresponding to the present set of control  
9 information,

10 and wherein the multiplexing control means controls  
11 the multiplexing means to repeatedly multiplex each set of  
12 control information with the corresponding set of video data  
13 during the valid period of the set of control information.

1 6. The broadcasting apparatus of Claim 5,  
2 wherein the multiplexing control means controls the  
3 multiplexing means to repeatedly multiplex each set of  
4 control information with the corresponding video data  
5 starting from a predetermined time before the valid period  
6 of the set of control information, the predetermined time  
7 being sufficiently long to enable a reception apparatus to  
8 process a set of control information.

1 7. The broadcasting apparatus of Claim 5, wherein the

2 multiplexing control means appends a version number,  
3 reflecting the valid period of each set of control  
4 information, to each set of control information in a given  
5 content.

1 8. The broadcasting apparatus of Claim 3,

2 wherein each content includes a plurality of sets of  
3 control information,

4 wherein the construction table storing means includes  
5 a valid period table indicating a valid period for a set of  
6 control information within the reproduction period of the  
7 corresponding set of video data, for each of the plurality  
8 of sets of control information included in a given content,

9 wherein the multiplexing control means controls the  
10 multiplexing means to repeatedly multiplex a given set of  
11 control information with the corresponding set of video data  
12 during the valid period of the given set of control  
13 information, based on the valid period table, and

14 wherein the multiplexing control means appends a  
15 version number, reflecting the valid period of each set of  
16 control information, to each set of control information in a  
17 given content.

1 9. The broadcasting apparatus of Claim 3, wherein at least  
2 one set of control information includes a set of additional  
3 information representing one of text and a graphic image

4     that is to be displayed superimposed onto the corresponding  
5     video data.

1     10. The broadcasting apparatus of Claim 3, wherein each set  
2     of control information stored by the second storing means  
3     includes a set of link information showing contents that are  
4     link destinations and supplementary images representing menu  
5     items for each link destination.

1     11. The broadcasting apparatus of Claim 10,  
2         wherein at least one set of control information  
3     includes:  
4         a plurality of sets of additional information  
5     representing one of text and a graphic image that is to be  
6     displayed superimposed onto the corresponding video data;  
7     and  
8         a set of script information that validates one of the  
9     sets of additional information within a reception apparatus,  
10    in accordance with a user operation.

1     12. The broadcasting apparatus of Claim 10,  
2         wherein at least one set of control information  
3     includes:  
4         at least two groups of a set of link information and  
5     supplementary images;  
6         a set of initial information showing a group of a set

7 of link information and supplementary images that is valid  
8 at a start of reproduction by a reception apparatus for a  
9 content including the present set of control information;  
10 and

11 a set of script information that changes a valid  
12 setting in the reception apparatus in accordance with a user  
13 operation.

1 13. The broadcasting apparatus of Claim 12, wherein each  
2 group of a set of link information and supplementary image  
3 further includes a set of additional information  
4 representing one of text and a graphic image that is to be  
5 displayed superimposed onto the corresponding video data.

1 14. A broadcasting apparatus for broadcasting an interactive  
2 program composed of a plurality of contents that are linked  
3 to one another, the broadcasting apparatus comprising:

4 first storing means for storing a plurality of sets of  
5 video data that each have an identifier, each set of video  
6 data being an element of a content that composes an  
7 interactive program;

8 second storing means for storing a plurality of sets  
9 of control information that each have an identifier, each  
10 set of control information being another element of a  
11 content that composes an interactive program and each set of  
12 control information including a set of link information that

13 shows an identifier of a set of control information for a  
14 content that is a link destination;  
15 construction table storing means for storing a  
16 construction table showing correspondence between the sets  
17 of video data stored in the first storing means and the sets  
18 of control information stored in the second storing means;  
19 multiplexing means for reading the plurality of sets  
20 of video data stored in the first storing means and the  
21 plurality of sets of control information stored in the  
22 second storing means as respective digital data streams, and  
23 for multiplexing the digital data streams to generate a  
24 multiplexed stream;  
25 multiplexing control means for referring to the  
26 construction table and controlling the multiplexing means to  
27 multiplex the plurality of sets of video data and to  
28 repeatedly multiplex a set of control information  
29 corresponding to an arbitrary set of video data; and  
30 broadcasting means for placing the multiplexed stream  
31 generated by the multiplexing means onto a digital broadcast  
32 wave and broadcasting the digital broadcast wave.

1 15. The broadcasting apparatus of Claim 14, wherein the  
2 multiplexing control means includes:

3 first determining means for determining a multiplexing  
4 start position in the multiplexed stream for each set of  
5 video data in each content given in the construction table;

6 and

7 second determining means for determining a plurality  
8 of multiplexing start positions in the multiplexed stream  
9 for each set of control information included in each content  
10 given in the construction table, wherein the multiplexing  
11 start positions for a given set of control information are  
12 determined so that the given set of control information is  
13 multiplexed a plurality of times;

14 wherein the multiplexing means reads the sets of video  
15 data from the first storing means and the sets of control  
16 information from the second storing means in accordance with  
17 the multiplexing start positions determined by the first  
18 determining means and the second determining means.

1 16. The broadcasting apparatus of Claim 15,

2 wherein each set of control information stored in the  
3 second storing means includes a set of link information  
4 showing contents that are link destinations and a set of  
5 time information showing a valid period of the set of  
6 control information to which the time information belongs,  
7 and

8 wherein the second determining means determines the  
9 plurality of multiplexing start positions for each set of  
10 control information so that each set of control information  
11 is repeatedly multiplexed during the valid period of the set  
12 of control information.



1 17. The broadcasting apparatus of Claim 16, wherein the  
2 multiplexing control means further includes:  
3 version appending means for appending a different  
4 version number to each of the plurality of sets of control  
5 information included in a same content, the version numbers  
6 being assigned in accordance with the valid period given in  
7 the set of time information included in each set of control  
8 information,  
9 wherein the multiplexing means multiplexes the sets of  
10 control information with the appended version numbers in  
11 accordance with the multiplexing start positions determined  
12 by the second determining means.

1 18. The broadcasting apparatus of Claim 16, wherein the  
2 second determining means determines the multiplexing start  
3 positions so that each set of control information is  
4 multiplexed with the corresponding video data starting from  
5 a predetermined time before the valid period of the set of  
6 control information, the predetermined time being  
7 sufficiently long to enable a reception apparatus to process  
8 a set of control information.

1 19. The broadcasting apparatus of Claim 15, wherein the  
2 multiplexing control means further includes:  
3 system information storing means for storing system

4 information for specifying a multiplexed stream on a digital  
5 broadcast wave, wherein the system information includes a  
6 stream ID for each set of video data and a stream ID for  
7 each set of control information;

8 identification information appending means for  
9 converting an identifier of a set of video data and an  
10 identifier of a set of control information respectively into  
11 first identification information and second identification  
12 information, based on the system information, for appending  
13 the first identification information to the set of video  
14 data, and for appending the second identification  
15 information to the set of control information; and

16 link destination information converting means for  
17 converting the link information in each set of control  
18 information into the first identification information and  
19 second identification information for the set of video data  
20 and set of control information of each content that is a  
21 link destination,

22 wherein the multiplexing means generates the  
23 multiplexed stream using the system information, the first  
24 identification information, and the second identification  
25 information.

1 20. The broadcasting apparatus of Claim 19, wherein the  
2 first identification information is expressed as a unique  
3 stream ID for each set of video data and the second

4 identification information is expressed as a combination of  
5 a stream ID that is common to all sets of control  
6 information in a content and a unique parameter for each set  
7 of control information in the content.

1 21. The broadcasting apparatus of Claim 20,  
2 wherein each content includes a plurality of sets of  
3 control information, each set of control information  
4 including a set of link information showing contents that  
5 are link destinations and a set of time information  
6 indicating a valid period for the present control  
7 information within the reproduction period of the set of  
8 video data corresponding to the present set of control  
9 information,  
10 and wherein the multiplexing control means controls  
11 the multiplexing means to repeatedly multiplex each set of  
12 control information with the corresponding set of video data  
13 during the valid period of the set of control information.

1 22. The broadcasting apparatus of Claim 20,  
2 wherein each content includes a plurality of sets of  
3 control information,  
4 wherein the construction table storing means includes  
5 a valid period table indicating a valid period for a set of  
6 control information within the reproduction period of the  
7 corresponding set of video data, for each of the plurality

8 of sets of control information included in a given content,  
9 wherein the multiplexing control means controls the  
10 multiplexing means to repeatedly multiplex a given set of  
11 control information with the corresponding set of video data  
12 during the valid period of the given set of control  
13 information, based on the valid period table, and  
14 wherein the multiplexing control means appends a  
15 version number, reflecting the valid period of each set of  
16 control information, to each set of control information in a  
17 given content.

1 23. The broadcasting apparatus of Claim 21,  
2 wherein the multiplexing control means controls the  
3 multiplexing means to repeatedly multiplex each set of  
4 control information with the corresponding video data  
5 starting from a predetermined time before the valid period  
6 of the set of control information, the predetermined time  
7 being sufficiently long to enable a reception apparatus to  
8 process a set of control information.

1 24. The broadcasting apparatus of Claim 21,  
2 wherein the multiplexing control means appends a  
3 version number, reflecting the valid period of each set of  
4 control information, to each set of control information in a  
5 given content.

1 25. The broadcasting apparatus of Claim 19, wherein each set  
2 of control information stored by the second storing means  
3 includes a set of link information showing contents that are  
4 link destinations and supplementary images representing menu  
5 items for each link destination.

1 26. The broadcasting apparatus of Claim 15, wherein the  
2 multiplexing control means further includes:

3 a bandwidth assigning table that shows a bandwidth for  
4 each content, the bandwidth being for the digital data  
5 stream of the sets of control information in a content that  
6 are repeatedly transmitted and being a bandwidth that is  
7 part of a total bandwidth of the multiplexed stream,

8 wherein the second determining means determines the  
9 multiplexing start positions of sets of control information  
10 in accordance with the bandwidths given in the bandwidth  
11 assigning table, and

12 wherein the multiplexing means multiplexes the digital  
13 data streams in accordance with the bandwidth assigning  
14 table.

1 27. The digital broadcasting apparatus of Claim 14, further  
2 comprising:

3 third storing means for storing a plurality of sets of  
4 audio data that each have an identifier, each set of audio  
5 data being an element of a content that composes an

6 interactive program,  
7 wherein the construction table shows a correspondence  
8 between a set of video data, a set of audio data and sets of  
9 control information in each content, and  
10 wherein the multiplexing means additionally  
11 multiplexes the audio data into the multiplexed stream.

1 28. A broadcasting apparatus for broadcasting an interactive  
2 program composed of a plurality of contents that are linked  
3 to one another, the broadcasting apparatus comprising:  
4 image storing means storing a plurality of sets of  
5 video data and a plurality of sets of still image data;  
6 control information storing means for storing sets of  
7 type 1 control information and sets of type 2 control  
8 information, the sets of type 1 control information being  
9 elements of contents including video images, the sets of  
10 type 2 control information being elements of contents  
11 including still images, and the sets of type 1 control  
12 information and sets of type 2 control information including  
13 sets of link information that indicate contents which are  
14 link destinations for a present content;  
15 construction table storing means storing a first  
16 construction table showing correspondence between sets of  
17 video data and sets of type 1 control information and a  
18 second construction table showing correspondence between  
19 sets of still image data and sets of type 2 control

20 information;  
21 first multiplexing means for generating a first  
22 multiplexed stream by multiplexing a set of video data in  
23 the first construction table and repeatedly multiplexing a  
24 set of type 1 control information corresponding to the set  
25 of video data;  
26 second multiplexing means for generating a second  
27 multiplexed stream by repeatedly multiplexing a plurality of  
28 sets of still image data in the second construction table  
29 with a set of type 2 control information; and  
30 broadcasting means for placing the multiplexed stream  
31 generated by the multiplexing means onto a digital broadcast  
32 wave and broadcasting the digital broadcast wave.

1 29. A reception apparatus for receiving a broadcast wave  
2 including an interactive program composed of a plurality of  
3 contents that are linked to one another, wherein the  
4 broadcast wave includes a multiplexed stream into which  
5 different sets of video data have been multiplexed with a  
6 plurality of sets of control information showing a link to  
7 another content, the sets of control information being  
8 repeatedly multiplexed,

9 the reception apparatus comprising:

10 extracting means for extracting a set of video data  
11 and a set of control information in a same content as the  
12 set of video data;

13           storing means for storing the extracted set of control  
14   information;  
15           reproducing means for reproducing the extracted set of  
16   video data and outputting an image signal;  
17           operation means for receiving a user operation that  
18   indicates a content switching; and  
19           control means for controlling the extracting means to  
20   extract another content indicated by the set of control  
21   information stored in the storing means, in accordance with  
22   the user operation.

1   30. The reception apparatus of Claim 29,  
2           wherein the sets of control information each include  
3   valid period information showing a valid period for the set  
4   of control information,  
5           wherein each content has to a plurality of sets of  
6   control information which have different valid periods, and  
7           wherein the reproducing means reproduces supplementary  
8   images in the set of control information stored in the  
9   storing means during the valid period of the set of control  
10   information.

1   31. The reception apparatus of Claim 29,  
2           wherein each content corresponds to a plurality of  
3   sets of control information which have different valid  
4   periods,



5           wherein each set of control information has a version  
6   number which reflects the valid period, and  
7           wherein the control means controls the extracting  
8   means to extract a set of control information which has a  
9   next version number, when one set of control information has  
10   been extracted by the extracting means.

1   32. The reception apparatus of Claim 29,  
2           wherein first identification information is appended  
3   to each set of video data and second identification  
4   information is appended to each set of control information,  
5   and wherein the sets of control information include first  
6   identification information and second identification  
7   information which express a content of a link destination,  
8           wherein the extracting means includes:  
9           first judging means for judging the first  
10   identification information appended to sets of video data in  
11   the broadcast wave;  
12           second judging means for judging the second  
13   identification information appended to sets of control  
14   information in the broadcast wave;  
15           obtaining means for obtaining a set of video data and  
16   when the first judging means judges that the first  
17   identification information coincides with specified  
18   identification information indicated by the control means  
19   and obtaining a set of control information when the second

20     judging means judges that the second identification  
21     information coincides with specified identification  
22     information,  
23             wherein the reproducing means reproduces the set of  
24     video data obtained by the obtaining means, and the storing  
25     means stores the set of control information obtained by the  
26     obtaining means.

1     33. The reception apparatus of Claim 32,  
2             wherein a set of entry information giving first  
3     identification information and second identification  
4     information for the content to be reproduced first is  
5     multiplexed into the multiplexed stream,  
6             wherein the control means sends an indication to the  
7     extracting means to extract the set of entry information  
8     when the operation means has received a selection operation  
9     for a multiplexed stream from a user,  
10            wherein the extracting means further includes:  
11            entry information extracting means for receiving the  
12     indication from the control means and extracting the set of  
13     entry information from the multiplexed stream; and  
14            entry information storing means for storing the set of  
15     entry information extracted by the entry information  
16     extracting means,  
17            wherein the control means gives the obtaining means an  
18     indication of the first identification information and

19 second identification information included in the entry  
20 information as the specified identification information.

1 34. The reception apparatus of Claim 32,  
2 wherein the link information includes an identifier of  
3 a set of video data and an identifier of a set of control  
4 information which show a content of a link destination,  
5 wherein the first identification information and  
6 second identification information are IDs (identifiers) of  
7 digital data streams which represent a set of video data and  
8 a set of control information in the multiplexed stream,  
9 wherein a correspondence table, showing correspondence  
10 between the identifiers for sets of video data and the first  
11 identification information and correspondence between the  
12 identifiers for sets of control information and the second  
13 identification information, is multiplexed into the  
14 multiplexed stream and repeatedly transmitted, and  
15 wherein the extracting means extracts the  
16 correspondence table and the control means refers to the  
17 correspondence table, converts an identifier of the set of  
18 video data included in the link information into first  
19 identification information and an identifier of the set of  
20 control information into second identification information  
21 and informs the extracting means of the converted first and  
22 second identification information.

1     35. The reception apparatus of Claim 32,  
2         wherein at least one set of control information  
3     includes link information showing a content of a link  
4     destination and supplementary images that include a menu  
5     item image for each link destination,  
6         wherein the reproducing means includes:  
7         video data reproducing means for reproducing the set  
8     of video data obtained by the obtaining means; and  
9         image reproducing means for reproducing supplementary  
10    images stored by the storing means superimposed onto the  
11    video data,  
12         wherein the operation means receives a user selection  
13    of a menu item image, and  
14         wherein the control means determines the first  
15    identification information and the second identification  
16    information of a link destination content in accordance with  
17    the link information and the menu item image selected by the  
18    user.

1     36. The reception apparatus of Claim 35,  
2         wherein at least one set of control information  
3     includes additional information which expresses one of a  
4     text image and a graphics image, and wherein the reproducing  
5     means additionally reproduces one of the text image and  
6     graphics image stored in the storing means superimposed onto  
7     the video data.

8     37. The reception apparatus of Claim 36,  
9         wherein one content has a plurality of sets of control  
10        information which each have a different valid period,  
11         wherein each set of control information in a same  
12        content has a version number which reflects a valid period  
13        of the set of control information, and  
14         wherein when the extracting means has extracted a set  
15        of control information, the control means controls the  
16        extracting means to extract a set of control information  
17        that has a next version number.

1.     38. The reception apparatus of Claim 36,  
2         wherein each set of control information includes valid  
3        period information showing a valid period of the set of  
4        control information,  
5         wherein each content has a plurality of sets of  
6        control information which have different valid periods,  
7         and wherein the reproducing means reproduces  
8        supplementary images stored in the storing means only during  
9        a valid period of the set of control information stored in  
10       the storing means.

1     39. The reception apparatus of Claim 38,  
2         wherein each of the plurality of sets of control  
3        information for a same content has a version number that  
4        reflects the valid period, and wherein the control means

5 controls the extracting means to extract a set of control  
6 information which has a next version number, when one set of  
7 control information has been extracted by the extracting  
8 means.

1 40. The reception apparatus of Claim 36,  
2 wherein at least one set of control information  
3 includes a plurality of sets of additional information which  
4 each express one of a text image and a graphics image to be  
5 displayed superimposed onto the video data, and a set of  
6 script information that validates one of the sets of  
7 additional information within a reception apparatus, in  
8 accordance with a user operation,  
9 wherein the control means determines a valid set of  
10 additional information by interpreting and executing the  
11 script information stored in the storing means, and  
12 wherein the reproducing means reproduces one of the  
13 text image and the graphics image included in the valid set  
14 of additional information based on a result of interpreting  
15 and executing by the control means.

1 41. The reception apparatus of Claim 36,  
2 wherein at least one set of control information  
3 includes: at least two groups that each include a set of  
4 link information and a supplementary image; a set of initial  
5 information showing a valid group at a start of reproduction

6 by the reception apparatus of a content to which the set of  
7 control information belongs; and a set of script information  
8 which changes a setting of a valid group in the reception  
9 apparatus in accordance with a user operation,

10 wherein the control means determines a valid group by  
11 interpreting and executing the initial information and  
12 script information stored in the storing means,

13 wherein the reproducing means reproduces the  
14 supplementary images in the valid group in accordance with  
15 an interpreting and executing result of the control means.

1 42. The reception apparatus of Claim 29,

2 wherein the multiplexed stream includes sets of audio  
3 data corresponding to the sets of video data,

4 wherein the extracting means extracts a set of audio  
5 data corresponding to a set of video data from the broadcast  
6 wave,

7 and wherein the reproducing means additionally  
8 reproduces the extracted set of audio data.

1 43. A reception apparatus for receiving a broadcast wave  
2 including an interactive program composed of a plurality of  
3 contents that are linked to one another,

4 wherein the broadcast wave includes a multiplexed  
5 stream into which different sets of video data have been  
6 multiplexed with a plurality of sets of control information

7       showing a link to another content, the sets of control  
8       information being repeatedly multiplexed,  
9               wherein first identification information is appended  
10       to each set of video data and second identification  
11       information is appended to each set of control information,  
12               wherein the sets of control information include first  
13       identification information and second identification  
14       information which express a content of a link destination,  
15               the reception apparatus comprising:  
16               extracting means for extracting a set of video data  
17       and a set of control information in a same content as the  
18       set of video data;  
19               storing means for storing the extracted set of control  
20       information;  
21               reproducing means for reproducing the extracted set of  
22       video data and outputting an image signal;  
23               operation means for receiving a user operation that  
24       indicates a content switching; and  
25               control means for controlling the extracting means to  
26       extract another content indicated by the set of control  
27       information stored in the storing means, in accordance with  
28       the user operation,  
29               the extracting means including:  
30               first judging means for judging the first  
31       identification information appended to sets of video data in  
32       the broadcast wave;



33           second judging means for judging the second  
34   identification information appended to sets of control  
35   information in the broadcast wave; and  
36           obtaining means for obtaining a set of video data and  
37   when the first judging means judges that the first  
38   identification information coincides with specified  
39   identification information indicated by the control means  
40   and obtaining a set of control information when the second  
41   judging means judges that the second identification  
42   information coincides with specified identification  
43   information,  
44           wherein the reproducing means reproduces the set of  
45   video data obtained by the obtaining means, and the storing  
46   means stores the set of control information obtained by the  
47   obtaining means.

1   44. The reception apparatus of Claim 43,  
2           wherein the link information includes an identifier of  
3   a set of video data and an identifier of a set of control  
4   information which show a content of a link destination,  
5           wherein the second identification information is an  
6   identifier for a set of control information,  
7           wherein a correspondence table, showing correspondence  
8   between the identifiers for sets of video data and the first  
9   identification information and correspondence between the  
10   identifiers for sets of control information and the second

11 identification information, is multiplexed into the  
12 multiplexed stream and transmitted,  
13 wherein the extracting means extracts the  
14 correspondence table, and  
15 wherein the control means refers to the extracted  
16 correspondence table, converts the identifier of the set of  
17 video data included in the link information into first  
18 identification information, and informs the extracting  
19 means.

1 45. The reception apparatus of Claim 44, wherein the first  
2 identification information includes a packet identifier in  
3 accordance with MPEG2 (Moving Pictures Experts Group 2)  
4 standard.

1 46. The reception apparatus of Claim 44, wherein the first  
2 identification information is a combination of a packet  
3 identifier in accordance with MPEG2 (Moving Pictures Experts  
4 Group 2) standard and another parameter.

1 47. A reception apparatus in a broadcasting system for  
2 achieving interactiveness using a broadcast wave,  
3 wherein the broadcast wave includes a first  
4 multiplexed stream which represents a plurality of stream-  
5 based contents that each include a set of video data and a  
6 set of type 1 control information, and a second multiplexed

7 stream which represents a plurality of page-based contents  
8 that each include a set of still image data and a set of  
9 type 2 control information,  
10 the first multiplexed stream having the sets of type 1  
11 control information that show a link to another content  
12 repeatedly multiplexed with the corresponding sets of video  
13 data,  
14 the second multiplexed stream having a plurality of  
15 sets of still image data and a plurality of sets of type 2  
16 control information repeatedly multiplexed,  
17 the reception apparatus comprising:  
18 extracting means for extracting one of a set of video  
19 data and a set of still image data, and one of a set of type  
20 1 control information and a set of type 2 control  
21 information in a same content from the broadcast wave;  
22 storing means for storing an extracted set of one of  
23 type 1 control information and type 2 control information;  
24 judging means for judging whether a content extracted  
25 by the extracting means is one of a stream-based content and  
26 a page-based content;  
27 reproducing means for reproducing, when the judging  
28 means judges that the judging means is a stream-based  
29 content, the extracted set of video data and outputting an  
30 image signal, and for reproducing, when the judging means  
31 judges that the judging means is a page-based content, the  
32 extracted set of still image data and outputting an image

33     signal;  
34         operation means for receiving a user operation that  
35     indicates a content switching; and  
36         control means for controlling the extracting means to  
37     extract another content indicated by the set of control  
38     information stored in the storing means, in accordance with  
39     the user operation.

1     48. A broadcasting system which includes a broadcasting  
2     apparatus and a reception apparatus and which achieves  
3     interactiveness using a broadcast wave,  
4         the broadcasting apparatus comprising:  
5         content storing means for storing the plurality of  
6     contents, each content including a set of video data and a  
7     set of control information that indicates another content  
8     that is a link destination for a present content; and  
9         transmitting means for multiplexing a set of video  
10     data and a plurality of sets of the same control information  
11     included in a same content as the set of video data, and for  
12     transmitting the multiplexed sets of video data and control  
13     information,  
14         and the reception apparatus comprising:  
15         extracting means for extracting a set of video data  
16     and a set of control information in a same content as the  
17     set of video data;  
18         storing means for storing the extracted set of control

19 information;  
20 reproducing means for reproducing the extracted set of  
21 video data and outputting an image signal;  
22 operation means for receiving a user operation that  
23 indicates a content switching; and  
24 control means for controlling the extracting means to  
25 extract another content indicated by the set of control  
26 information stored in the storing means, in accordance with  
27 the user operation.

1 49. A recording medium used by a reception apparatus that  
2 includes a receiving unit for receiving a broadcast wave  
3 including an interactive program composed of a plurality of  
4 contents that are linked to one another, an extracting unit  
5 for extracting one digital data stream from the broadcast  
6 wave, and a reproducing unit for reproducing a set of video  
7 data and outputting an image signal, the recording medium  
8 storing a program that includes the following steps:

9 an extracting step for extracting a set of video data  
10 and a set of control information in a same content as the  
11 set of video data from the broadcast wave;

12 a storing step for storing the extracted set of  
13 control information into a memory in the reception  
14 apparatus;

15 a reproducing step for reproducing the extracted set  
16 of video data and outputting an image signal;

17           a judging step for judging whether a user operation  
18   indicating a switching of content has been made; and  
19           a control step for controlling the extracting unit to  
20   extract another content indicated by the set of control  
21   information stored in the memory, when the judging step  
22   judges that a user operation indicating a switching of  
23   content has been made.